IN THE CLAIMS:

Please amend the claims as set forth below. No new matter has been added.

1. (Previously Presented) A method for APol-DPSK transmission comprising:

modulating an input optical signal according to a precoded electronic data signal by differential phase shift keying between two optical bits separated by an even number of bit periods to generate an encoded optical signal;

alternating the polarization of the encoded optical signal using a modulator such that successive optical bits have substantially orthogonal polarizations to generate an APol-DPSK signal; and

demodulating the APol-DPSK signal using an even bit delay line interferometer.

2. (Previously Presented) The method of claim 10 wherein the modulation is performed by a phase modulator driven by a sinusoidal RF voltage.

3. (Previously Presented) The method of claim 10 wherein the modulation is performed by a phase modulator driven by a train of square pulses.

4. (Previously Presented) The method of claim 10 wherein the input optical signal is provided having a polarization oriented at a predetermined angle such that the polarization of successive optical bits of the transmitted APol-DPSK signal are substantially orthogonal.

5. (Previously Presented) The method of claim 10 wherein the modulation is performed by a Mach-Zehnder modulator including a polarization rotation device in at least one arm.

6. (Original) The method of claim 5 wherein the polarization rotation device is a half-wave plate.

7. (Previously Presented) The method of claim 5 wherein at least one arm of the Mach-Zehnder modulator is driven by a sinusoidal RF voltage.

8. (Previously Presented) The method of claim 5 wherein at least one arm of the Mach-Zehnder modulator is driven by a train of square pulses running at half the bit rate.

9. (Previously Presented) A method of APol-DPSK transmission comprising:

modulating an optical signal according to a precoded electronic data signal by differential phase shift keying between two optical bits separated by an even number of bit periods and performing polarization alternating such that successive optical bits have substantially orthogonal polarizations to generate an APol-DPSK signal;

wherein said modulating and said polarization alternating are performed simultaneously by a Mach-Zehnder modulator including a polarization rotation device in at least one arm, and

wherein input signals to both arms of the Mach-Zehnder modulator have polarizations that are the same.

10. (Original) The method of claim 12 wherein the polarization rotation device is a half-wave plate.

11. (Original) The method of claim 12 further comprising demodulating the APol-DPSK signal using an even bit delay line interferometer.

12. (Currently Amended) An optical transmitter for APol-DPSK transmission comprising:

~~an optical source;~~

~~a precoder;~~

a Mach-Zehnder (MZ) modulator ~~device optically coupled to the optical source~~ having a half-wave plate in one [[arm;]] arm, wherein input signals to both arms of the Mach-Zehnder modulator have polarizations that are the same; and

drive ~~circuitry~~ circuitry, coupled to the MZ modulator ~~device to drive~~ for driving the MZ modulator using a precoded data signal ~~from the precoder~~ to simultaneously provide polarization alternation and optical data encoding of an optical signal received by the MZ modulator using differential phase shift keying between two optical bits separated by an even number of bit periods to generate an APol-DPSK signal.

13. (Previously Presented) The transmitter of claim 26 wherein at least one arm of the Mach-Zehnder modulator is driven by a sinusoidal RF voltage.

14. (Previously Presented) The transmitter of claim 26 wherein at least one arm of the Mach-Zehnder modulator is driven by a train of square pulses running at half the bit rate.

15. (Previously Presented) The transmitter of claim 26 wherein the Mach-Zehnder modulator comprises two complementary output ports, and wherein the transmitter further comprises a polarization beam combiner for combining outputs from the two output ports of the Mach-Zehnder modulator.

16. (Previously Presented) The transmitter of claim 21 wherein at least one arm of the Mach-Zehnder modulator is driven by a sinusoidal RF voltage.

17. (Previously Presented) The transmitter of claim 21 wherein at least one arm of the Mach-Zehnder modulator is driven by a train of square pulses running at half the bit rate.

18. (Currently Amended) An optical transmission system for APol-DPSK transmission comprising:

an optical phase-shift-keying (PSK) data modulator optically ~~coupled to an optical source~~ [[and]] driven by a precoded electronic data signal ~~from the precoder device~~ to produce an optical DPSK [[signal]] signal, wherein the electronic data to be transmitted is

optically encoded by the PSK data modulator as differential phase shift keying between two optical bits separated by an even number of bit periods;

a polarization ~~alternator~~ alternator, optically coupled to the data ~~modulator~~ modulator, to provide polarization alternation to the optical DPSK signal ~~of the output of the data modulator~~ to produce an APol-DPSK signal; and

a ~~demodulator~~ demodulator, comprising an even bit delay line interferometer.